# EXHIBIT 2

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF OHIO

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| SARA HAWES, individually, and on behalf of all others similarly situated,<br><br>Plaintiff,<br><br>v.<br><br>MACY'S WEST STORES, INC.,<br><br>Defendant. | Case No. 1:17-cv-00754<br><br>Judge Timothy S. Black |

**DECLARATION OF SEAN IYER**

I, Sean Iyer, declare and state as follows:

1. I am over the age of 18 and under no disability. I have personal knowledge of the matters set forth herein, unless otherwise specifically indicated.

2. My name is Sean Iyer. I am an Executive Vice President at Compass Lexecon, a leading global economic consultancy. Previously, I was a partner at Cornerstone Research.

3. In 1995, I received a B.S. in economics from Presidency College at the University of Calcutta. In 2001, I received an M.A. in economics from the Warrington College of Business, at the University of Florida.

4. I have extensive experience in consumer fraud, product liability litigation, and FTC deceptive advertising matters. My work in these areas includes class certification defense, theories of liability and damages analysis.

5. I have been retained by counsel for the Defendant to provide economic analysis of issues related to damages in this case, particularly with regard to class certification.

6. In connection with my work in this case, I generated a written report dated April 30, 2021. A true and accurate copy of that report, including all exhibits are attached to this Declaration as **Exhibit A**.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 30, 2021.

Sean Iyer

# EXHIBIT A

**IN THE UNITED STATES DISTRICT COURT**
**SOUTHERN DISTRICT OF OHIO**

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|---|---|
| SARA HAWES, individually, and on behalf of all others similarly situated,<br><br>Plaintiff,<br><br>v.<br><br>MACY'S WEST STORES, INC.,<br><br>Defendant. | Case No. 1:17-cv-00754<br><br>Judge Timothy S. Black |

# EXPERT REPORT OF SEAN IYER

**Executive Vice President, Compass Lexecon**

**April 30, 2021**

# I. Overview

## A. Qualifications and Experience

1. I am an Executive Vice President at Compass Lexecon, a leading global economic consultancy. Previously, I was a partner at Cornerstone Research and headed that firm's national intellectual property practice. I have led or currently lead engagements in high-stakes litigation in antitrust and competition, intellectual property, consumer fraud and product liability, and other complex commercial disputes.

2. I have a Bachelor's and a Master's degree in economics. My undergraduate training was in economics, mathematics and statistics. My graduate training focused on applied microeconomics and econometrics. Since 2002, I have been a practicing economic consultant and have broad expertise in applied economics, pricing, damages, survey methodology, and market research methods. I currently serve as Vice Chair of the American Bar Association's Antitrust Division IV Specialized Intellectual Property Section.

3. Since 2002, I have worked as a testifying or consulting expert on damages and damages-related issues on dozens of matters and my engagements have included several of the most-watched matters of recent times. I also have extensive experience and expertise in designing and conducting market research, including surveys, in both litigation and in my consulting work. Over the course of my career, I have reviewed, analysed, or conducted over a hundred surveys across a wide

variety of industries and applications. I have reviewed hundreds of scholarly articles, trade publications, and white papers on survey methodology and practice. Outside of my work in litigation, I have conducted surveys on behalf of corporate clients and for the Licensing Executives Society. I have authored or co-authored articles on survey design and contributed a peer-reviewed, scholarly chapter on conjoint surveys in the *Handbook of Marketing Analytics*.

4. I have spoken at several conferences and in numerous law firms on topics relating to damages and market research methods, including surveys. I have been an invited guest lecturer at New York University (M.B.A. and undergraduate) and at the Wharton School, University of Pennsylvania (M.B.A.) on the use of surveys in litigation applications.

5. I have served as an expert witness on both damages and survey methodology and practice and have testified in intellectual property cases in U.S. Federal District Courts, at the U.S. International Trade Commission, before the American Arbitration Association, and the Delhi (India) High Court. A copy of my curriculum vitae, which includes a list of publications and presentations pertaining to survey methodology and practice as well as a list of cases in which I have testified as an expert, is attached as Exhibit 1 to this report.

**B. Assignment**

6. I have been retained by Brooks Pierce, counsel for Macy's West Stores, Inc. to evaluate and opine on the Expert Report of Mr. Stefan Boedeker ("Boedeker

Report")[1] and to opine on the viability of Plaintiff's theory for obtaining class-wide damages.

### C. Materials Considered

7. I have relied upon materials from the sources listed in Exhibit 2 to this report.

8. My findings are based on materials currently available to me. I may revise or supplement my opinions pursuant to testimony provided by experts or fact witnesses or if additional materials relevant to my assignment are produced by the parties.

### D. Compensation

9. I am being compensated at a rate of $800 per hour for my work on this assignment, with reimbursement for expenses as incurred. I have been assisted by an analyst at Compass Lexecon in my work. My compensation does not depend in any way on the substance of my opinions or on the outcome of this matter.

## II. Summary Evaluation and Opinion Regarding the Boedeker Report

10. Mr. Boedeker was retained to determine if it is possible to use an economic loss model to quantify the damages suffered by the Plaintiffs and the Class as a result of the misleading and/or false representations or statements pertaining to the thread

[1] Expert Report of Stefan Boedeker, February 1, 2021.

count on the labels of the products.[2] Additionally, he was asked by counsel for Plaintiffs to (i) explain and outline an empirical study to quantify the economic loss to consumers, by assessing consumers' changes in choices and preferences if the misrepresentations were disclosed at the point of purchase, and (ii) explain and outline a statistical methodology to calculate class-wide damages utilizing transactional purchase data that enable the valuation of the attributes that a product is comprised of.[3] The empirical study he proposes in the Boedeker Report is called conjoint analysis. The statistical methodology that Mr. Boedeker claims he will use to calculate class-wide damages utilizing transactional purchase data is called hedonic pricing.[4]

11. Notably, Mr. Boedeker has not actually done *any* empirical analysis. He has not actually conducted a conjoint analysis-based survey, only said that he intends to do one. Nor has he actually analyzed any transactional data. In fact, he does not offer a model that is specific to this matter. Instead, he recites a summary of general approaches to hedonic pricing along with a superficial and incomplete explanation of what explanatory variables he may use. Thus, in the absence of any empirical analysis, it is unscientific and speculative for Mr. Boedeker to contend that his two approaches can be used with actual data in the instant matter to arrive at reliable ways to calculate economic loss, if any, to consumers.

[2] Boedeker Report, ¶11.
[3] Boedeker Report, ¶11.
[4] Boedeker Report, ¶57.

12. Any claim that conjoint analysis and hedonic pricing are well known approaches and therefore applicable in the instant matter is a red herring and irrelevant. What is important is the specific application of each model to the context at hand to see if the predictions of the models work. That is the essence of the scientific method.[5] The scientific method involves making hypotheses, deriving predictions from them as logical consequences, and then carrying out experiments or empirical observations based on those predictions. Hypotheses are then tested by conducting experiments or studies. In the Boedeker report, Mr. Boedeker has only made hypotheses. He has not done any empirical work or even presented an actual model to test predictions. Therefore, at a basic level, his approach is unscientific and speculative, and cannot be used to calculate economic loss, if any, to consumers.

13. The remainder of this report is organized as follows. In Section III, I evaluate and opine on Mr. Boedeker's conjoint approach proposal. In Section IV, I evaluate and opine on his hedonic pricing proposal.

## III. Evaluation and Opinions Regarding Mr. Boedeker's Proposed Conjoint Approach

14. Setting aside the fact that Mr. Boedeker has not done any empirical work or collected any data to test any predictions with respect to economic loss, I now evaluate and opine on Mr. Boedeker's proposed conjoint approach.

[5] See, for example, Karl R. Popper, *The Logic of Scientific Discovery*, Routledge, 2nd Ed. (2002).

15. Generally speaking, conjoint analysis is a method for quantifying consumer preferences. The premise is that a product or service can be decomposed into its attributes (e.g., number of minutes included in a phone plan) that each has different levels (1,000 minutes, unlimited minutes, etc.). The output of a conjoint analysis is an estimation of how much each survey respondent values each level of each attribute. These preferences are known as "partworths," since they capture how much each part of the product is worth to the respondent.[6]

16. To understand how Mr. Boedeker proposes to use conjoint analysis, it is useful to summarize the "economic framework" outlined in Section 3 in the Boedeker Report. In essence, Mr. Boedeker claims he can estimate the economic losses incurred by consumers due to a failure to accurately disclose the thread count in certain Macy's bedding products by comparing market outcomes in two purely "hypothetical" states of the world. In his proposed analysis, he refers to one hypothetical state of the world as the "Actual-World," and the second he refers to as the "But-for-World."[7] The hypothetical premise in his actual-world assumes consumers bought the sheets without having the knowledge that certain thread counts were allegedly misrepresented whereas in the but-for-world, he assumes that consumers would be fully informed at the point of purchase of the alleged misrepresentation.

[6] Paul E. Green and Vithala R. Rao, "Conjoint Measurement for quantifying judgmental data," *Journal of Marketing Research*, pp. 355-363 (1971).
[7] Boedeker Report, ¶22. In the foregoing discussion, I do not capitalize the terms.

17. Mr. Boedeker discusses his proposed conjoint analysis approach in Section 4.2 of the Boedeker Report. Specifically, he states that conjoint analysis can determine the difference in value (measured in dollars or as a percentage of the purchase price in the actual-world) that customers place on products without misrepresentations and without omissions compared to an otherwise identical product with misrepresentations and with omissions.[8]

18. Mr. Boedeker's proposed conjoint driven approach to calculating economic loss has a serious economic flaw at its heart. His assumption that Macy's would sell the same number of sheets in the but-for world despite commanding a lower price for each sheet at the same marginal cost per sale is tantamount to assuming a forced sale for Macy's. As I show below, this means that Mr. Boedeker proposes to ignore the fact that Macy's willingness to sell would undoubtedly be different in the but-for-world in which Boedeker has attempted to model consumers' willingness to pay. This alone renders his analysis unhelpful to establish the but-for market price because his proposal, if carried out, would never consider a true but-for market equilibrium where demand (willingness to pay) and supply (willingness to sell) match.

19. Below, I describe in detail these and other flaws in Mr. Boedeker's proposed conjoint approach.

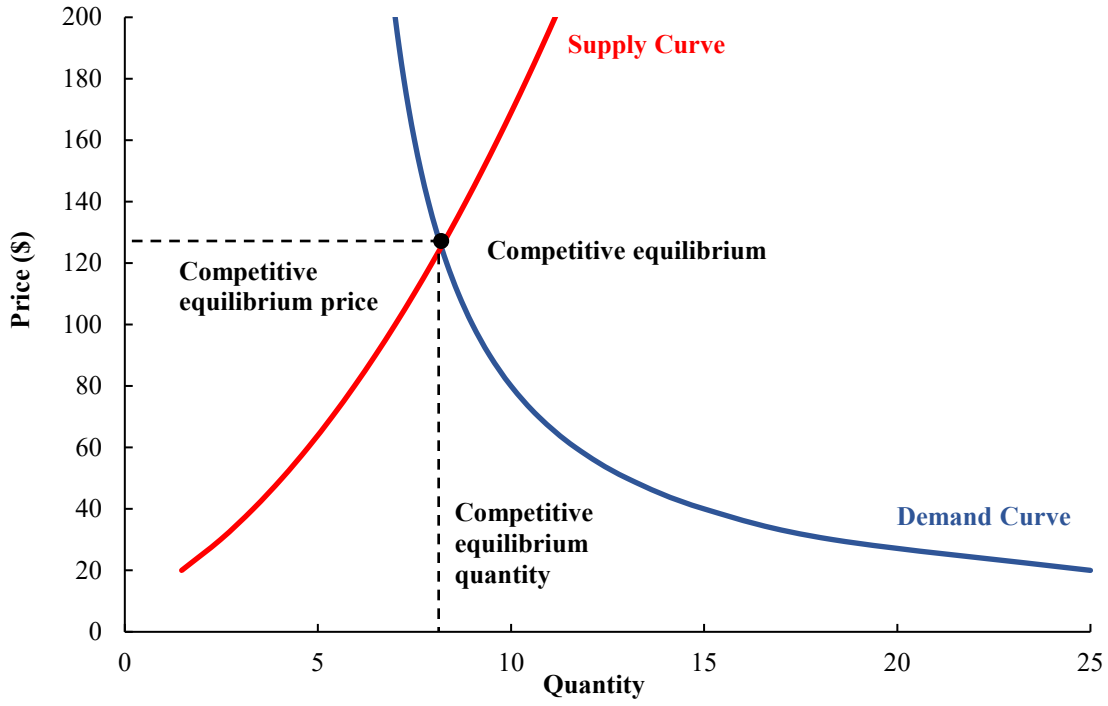
[8] Boedeker Report, ¶82.

### A. Because Mr. Boedeker Ignores But-For Supply, His Proposed Conjoint-Based Estimates are Not Useful to Determine Economic Loss

20. When examining loss of economic value, one must start with the concepts of supply and demand. As is well known from basic economics textbooks, the demand curve reflects the relationship between the quantity of a good demanded by consumers and prices, with more units of the good demanded at lower prices, all else equal. The inverse relationship between price and quantity demanded is known as the "Demand Curve."[9] The supply curve reflects the relationship between the quantity of a good supplied by firms and prices, with more units of the good supplied at higher prices, all else equal. The positive relationship between price and quantity supplied is known as the "Supply Curve."[10] Figure 1 shows these relationships, along with the competitive equilibrium outcome where market demand and market supply intersect.

[9] Paul A. Samuelson and William Nordhaus, *Economics*, 19th Ed., pp.46-50.
[10] Paul A. Samuelson and William Nordhaus, *Economics*, 19th Ed., pp.51-53.

**Figure 1**




21. To compare market outcomes between the actual and the but-for states of the world, Mr. Boedeker would need to measure:

- Market supply curve in the actual-world,
- Market supply curve in the but-for-world,
- Market demand curve in the actual-world, and
- Market demand curve in the but-for-world.

22. With these four elements properly measured, one can evaluate market outcomes, i.e., equilibrium price and quantity. For example, holding price constant, the quantity demanded for a sheet with an alleged misrepresentation of thread counts is likely to be lower than the quantity demanded for the same product without such

a misrepresentation. This means that the demand curve for the allegedly misrepresented sheet is going to be shifted to the left compared to the non-misrepresented sheet because there is less quantity demanded at any price for the misrepresented sheet compared to a non-misrepresented one.

23. In contrast to the typical supply and demand diagram, in which there is an "upward sloping" supply curve that indicates how the quantity supplied by firms increases with higher prices, the market supply curve that Mr. Boedeker purports to use is "fixed to the quantity of sheets sold" in the actual-world. While never acknowledged by Mr. Boedeker, this assumption is tantamount to a very specific type of market supply curve—a vertical market supply curve. Such a market supply curve implies that at "every price level the same quantity is supplied." There are two interpretations of such a market supply curve: either the nature of the product is such that is perfectly inelastic, an extreme assumption that rarely occurs in the real world, or it is an assumption unrelated to the nature of the product made by Mr. Boedeker. I discuss each interpretation, in turn.

24. Examples of products that have perfectly inelastic[11] market supply curves in the long-run are typically limited to rare art or ancient artifacts. This is because those items cannot be reproduced or duplicated—their supply is fixed regardless of the price. Importantly, Mr. Boedeker's demand-side conjoint analysis assumes that the market provides various types of sheets with their components (like thread counts) at various prices—the perfectly inelastic supply curve assumption is completely at

[11] See Fig.4-6 in Paul A. Samuelson and William Nordhaus, *Economics*, 19th Ed., p.73.

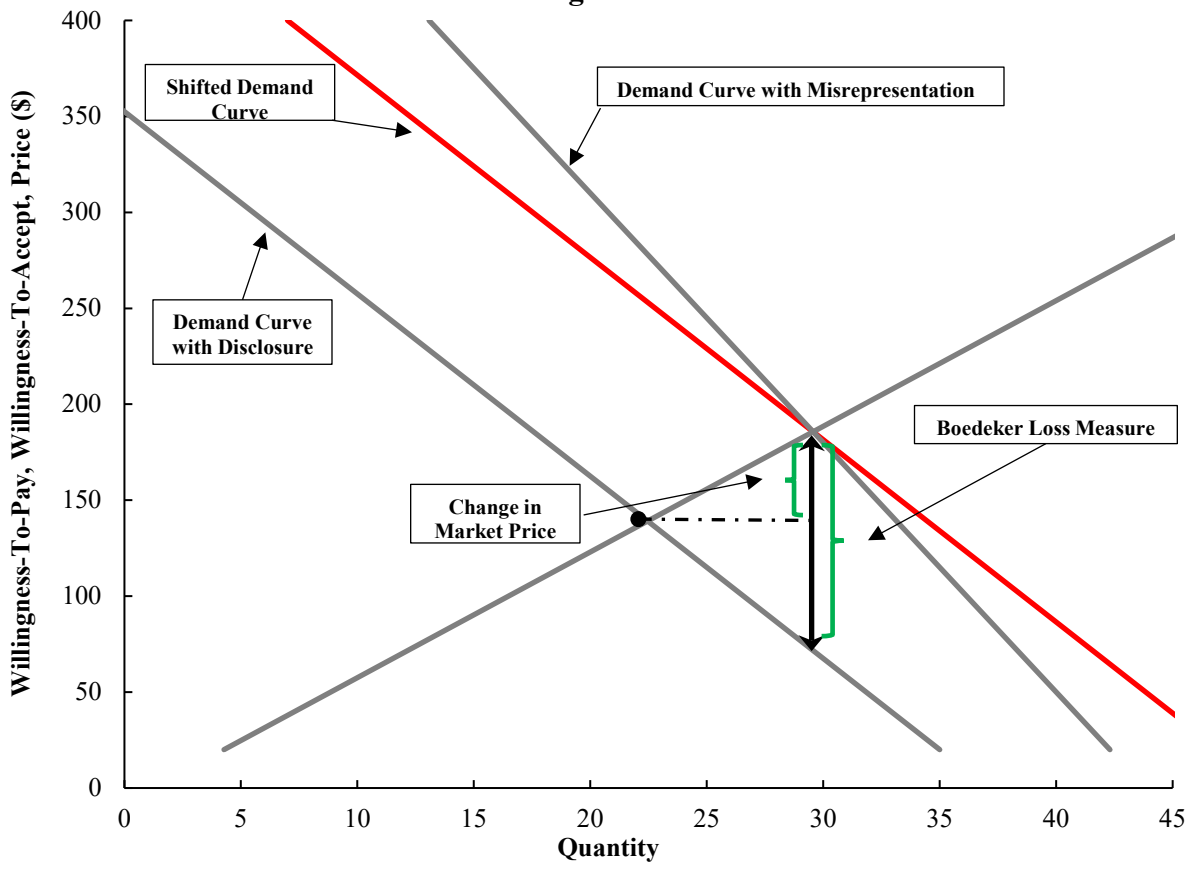
odds with his demand side formulation. Sheets can be duplicated, and their supply can expand or contract. Generally, when demand for sheets increases (e.g., due to rising incomes), sellers responded by selling more sheets. Similarly, a decrease in demand for sheets will lead to a reduction in the quantity supplied.

25. Since it is unrealistic for sheets to be perfectly inelastic, the vertical market supply curve is therefore an assumption (unrelated to the nature of the product) made by Mr. Boedeker. For him to claim that his analysis would estimate a change in market equilibrium prices, he must also be assuming that the supply does not change in response to a reduction in demand (from the actual-world market demand curve to the but-for-world market demand curve). This assumption has an important implication for the size of the estimated economic loss. It assumes that suppliers will not respond to the decrease in demand (e.g. will supply the same level of output regardless of market price). Therefore, by definition, a reduction in demand will only result in a lower price. Further, this price change would be equal to the full (vertical) difference between the two demand curves.

26. However, if Mr. Boedeker had recognized the basic fact that suppliers respond to the reduction in demand by reducing output (i.e., exhibit an upward sloping supply curve), the new market outcome would be *both* lower prices and output, but the implied price decline would not be as large as would be the case if there was no output response. Intuitively, when suppliers respond to declining demand by decreasing output, this decrease in production reduces their costs and these savings are passed on to consumers, which then mitigates the decline in demand and the

corresponding change in market price. Therefore, when the role of supply is properly recognized, the decrease in price is *smaller* than under Mr. Boedeker's assumption of no change in supply. Figure 2 illustrates this, where the change in market price (the smaller green bracket) is smaller than the "Boedeker Loss Measure" (the larger green bracket).

**Figure 2**




27. Therefore, even if Mr. Boedeker's conjoint analysis can yield a reliable estimate of the change in demand due to the disclosure of a product defect *by ignoring the potential for supply to respond to a shift in market demand* Mr. Boedeker's assumption ends up overestimating the size of economic damages from his model by calculating the largest possible price decline due to his hypothetical "measured"

demand shift (Mr. Boedeker's "vertical distance Δ between points A and B is equal to the compensation required to make all purchasers whole."[12])

28. Mr. Boedeker claims that it is appropriate to treat supply as fixed because "the shape of the supply curve(s) in the Actual-World and in the But-For-World is irrelevant for the quantification of economic damages because the focus is to determine a price in the But-For-World for the units sold in the Actual-World."[13] But this assertion merely reflects Mr. Boedeker's views about how damages should be calculated. It is not based on how markets work and how prices and output are determined in reality. Simply put, there is no economic basis for this extreme assumption. Indeed, Mr. Boedeker's argument that quantity should be considered to be fixed for damages purpose establishes that he has not calculated a market price because the economic loss that he proposes is not premised on a market price under actual supply and demand conditions, which would conform to fundamental economic principles.

29. To assume, as Mr. Boedeker does, that Macy's would sell the same number of sheets in the but-for world despite commanding a lower price for each sheet at the same marginal cost per sale is to assume a forced sale by Macy's. Put differently, although Mr. Boedeker's hypothetical constant supply curve admits that Macy's would ordinarily be willing to sell a smaller quantity of sheets at the lower price consumers

[12] Boedeker Report, ¶37, shown by the vertical distance between the blue and orange lines in his Figure 1.
[13] Boedeker Report, ¶52.

would then be willing to pay, Mr. Boedeker simply assumes that Macy's would be willing to sell the same quantity anyway, notwithstanding the lower price.

30. Thus, Mr. Boedeker's analysis does not estimate the change in market price resulting from failure to disclose product defects. Instead, his analysis proposes to estimate the reduction in price necessary to generate the same level of expected sales for a hypothetical product with and without a disclosed mischaracterization of thread count. This "discount" approach bears no economic loss relationship to any particular putative class member.[14]

**B. The Claimed Mechanics of Mr. Boedeker's Conjoint Approach Relies Upon a Statistical Methodology that Makes it Particularly Unsuitable to Determine if There is Common Impact Among Individual Members of the Putative Class**

31. The claimed mechanics of his proposed conjoint approach[15] rely upon a statistical methodology that makes it particularly unsuitable to determine whether there is common impact among individual members of the putative class because individual respondent-level utilities for attribute levels in his conjoint study would be derived from utilities from *all other* respondents. I explain why below.

32. Mr. Boedeker summarily describes the mechanics of his proposed approach to derive "partworths" in paragraphs 88-96 in the Boedeker Report. The methodology

[14] Mr. Boedeker mentions this "discount" in Boedeker Report, ¶116.

[15] Boedeker Report, ¶¶92-94. The methodology is known as Hierarchical Bayes Estimation with Gibbs Sampling using the Metropolitan Hastings Algorithm. Attributes are the sheet characteristics that Mr. Boedeker may include in his study, e.g., thread counts. Attribute levels are the specific values given to thread counts, e.g., 200 or 400. The above-named methodology is a specific technique to derive utilities (also known as "partworths") for each attribute level in a conjoint study.

is known as Hierarchical Bayes Estimation with Gibbs Sampling using the Metropolitan Hastings Algorithm. In his study, Mr. Boedeker purports to use this methodology to then calculate the value of an attribute level. Recall that attributes are sheet characteristics that Mr. Boedeker may include in his study, e.g., thread counts. Attribute levels are the specific numerical value for the thread counts, e.g., 200 or 400. The above-named methodology is a specific technique to derive individual-level utilities (known as "partworths," as described above) for each attribute level in a conjoint study.

33. The difficulty with using this approach is that any individual-level partworths do not depend only on that individual respondent's data—it is a function of *all other respondents' data*. Thus, if respondent Sue entered Mr. Boedeker's survey and gave certain answer choices, then Sue's estimated "partworths" would depend on respondent Jack's answer choices and every other respondent's answer choices. The below language from a Sawtooth Software research paper—Sawtooth Software is the very software that Mr. Boedeker claims he will use in his proposed conjoint analysis—makes this clear while describing how the Metropolis Hastings algorithm works:

> If a respondent's choices are fitted well, his estimated b [partworth] depends mostly on his own data and is influenced less by the population distribution. But if his choices are poorly fitted, then his estimated b depends more on the population distribution, and is influenced less by his data. **In this way, HB [Hierarchical Bayes] makes use of every respondent's data in producing estimates for each individual**.[16]

[16] Richard M. Johnson, "Understanding HB: An Intuitive Approach," *Sawtooth Software Research Paper Series*, (2000) at p. 10. Emphasis added.

Therefore, Mr. Boedeker chooses a methodology that assumes away differences at the individual level. By construction, estimates at the individual level are suppressed because they are always a function of every other individual's estimates. Thus, respondent Sue may not care to pay more for higher thread levels, but Mr. Boedeker's methodology would suppress that information because her "partworth" for thread counts would depend on Respondent Jack's partworth and every other respondents' parthworth for thread counts. This makes his claimed conjoint approach unsuitable to determine whether there is common impact among members of the putative class.

### C. Mr. Boedeker's Conjoint-Derived Estimate Would Mask Individual Differences in Willingness to Pay

34. Setting aside the fact that individual respondent-level utilities for attribute levels in his conjoint study would be derived from utilities from *all other* respondents, I now discuss why Mr. Boedeker's proposed assumptions with regard to disavowing individual level data and relying on aggregates to measure economic loss to all members of the putative class is flawed. Specifically, he disavows individual-level information because, in his saying, "it is well-established that individual level part-worth estimates of conjoint models are not reliable at the individual level and that results should only be considered at the aggregate level,"[17] and that "we are not interested in the probability of each individual survey participant purchasing a

[17] Boedeker Report, ¶116.

particular attribute combination."[18] He claims that his method "can be used to calculate class-wide damages in the merits phase of this case by multiplying the percentage of economic loss per unit as established above with the sales of the product during the class period."[19] Therefore, his method hinges on calculating an average value *across all respondents* and ascribing that value to each putative class member.

35. In reality, Mr. Boedeker's proposed estimate (an average) would mask substantial differences in economic losses across individuals, and would not provide an appropriate basis for compensating all victims of misrepresentation. Contrary to Mr. Boedeker's claims, his proposed estimate cannot be interpreted to reflect a single value appropriate for all consumers who purchased a misrepresented product.

36. Mr. Boedeker proposed to estimate the discount that would equate aggregate sales of the misrepresented product with those sales that would have occurred had the misrepresentation been disclosed. However, this single "discount" figure bears no necessary relationship to the economic loss to any particular class member because misrepresentation of a product can have varying impacts across different consumers. By proposing an average number, Mr. Boedeker's analysis fails to address these differences across consumers. Rather, his proposed estimate of the discount required to equate sales in the actual and but-for worlds would have little,

[18] Boedeker Report, ¶119.
[19] Boedeker Report, ¶154.

if any, relationship to the harm suffered by any of the individual consumers due to misrepresentation.

37. To better understand why, it is necessary to more fully understand the mechanics of Mr. Boedeker's calculation. My description of his calculation here relates to a particular configuration of a hypothetical sheet package and a particular thread count scenario. My discussion here assumes that Mr. Boedeker has generated reliable estimates of demand curves both for the actual and but-for worlds, which, of course, he has not done. I use that assumption here for the sole purpose of demonstrating the flaws in economic logic that underlie Mr. Boedeker's proposal that he will use one numerical figure, and that provides the appropriate compensation for all consumers affected by the alleged thread count misrepresentations.

38. Mr. Boedeker's proposed calculation is based on the following steps:

- The responses to Mr. Boedeker's conjoint survey questions would be used to develop statistical estimates of each respondent's willingness to pay for attributes of a hypothetical sheet, including their willingness to pay to avoid the allegedly misrepresented thread counts. This information, in turn, would be used to develop respondent-specific estimates of the probability that each respondent will purchase a particular hypothetical sheet at various prices.
- Mr. Boedeker proposes to use the respondent-specific estimates of willingness to pay for attributes of the hypothetical sheet to estimate the

probability that each respondent will purchase such sheets without a misrepresented thread count at each price point used in the analysis. The exercise would then be repeated to determine the probability that each respondent would purchase the same sheet with a disclosed misrepresentation scenario.

- Mr. Boedeker would then aggregate (i.e., averages) the estimated purchase probabilities across all respondents for the given sheet. Based on these average probabilities, he would first construct a demand curve for the no-misrepresentation sheet, which reflects the average probability that respondents will purchase the sheet at different prices. Following the same approach, Mr. Boedeker would then construct the demand curve for the same package that now includes the misrepresentation using the estimate of each respondent's value for the misrepresentation.
- With the two estimated aggregate demand curves, Mr. Boedeker can then calculate the discount required to generate the same level of aggregate sales of the misrepresented sheet to that he has proposes to estimate for the same sheet without a misrepresentation.
- As this description indicates, the analysis is based entirely on average probabilities calculated across all survey respondents. As such, the calculation fails to reflect differences in respondents' willingness to pay to avoid misrepresentations and, as a result, it would fail to provide an

estimate of the appropriate compensation for any respondent who differed from that average:

- Some individuals place little value on the alleged thread count misrepresentation at issue. For example, this could be because of shopping convenience (they were already at Macy's) or a strong inclination toward a sheet attribute such as color. Thus, disclosure of misrepresentation has little effect on their willingness to pay for (and probability of purchasing) the hypothetical sheet at issue. Payment of the discount that equates the average probabilities of purchasing the sheet with and without the thread count misrepresentation more than fully compensate these claimants, including those estimated to have no loss at all based on Mr. Boedeker's framework.
- Some individuals place great value on the alleged thread count misrepresentation at issue and disclosure of the misrepresentation thus has a large negative effect on their willingness to pay for (and probability of purchasing) the hypothetical sheet at issue. Payment of Mr. Boedeker's calculated discount would fail to fully compensate these individuals.
- Some individuals would have been willing to purchase the hypothetical sheet with alleged thread count misrepresentation at issue at the discounted price but would not have been likely to

purchase the misrepresented package at the higher price. Again, compensation based on the discount that equates sales of the product with and without misrepresentation has little relationship to the harm suffered by any of these types of individuals.

39. Further, the demand and supply framework I discussed above is based on analyzing the behavior of a "marginal consumer." In economics, market demand is determined by consumers' willingness to pay for that product. A consumer will purchase a good if the price is below that consumer's willingness to pay (all else equal).[20] The marginal consumer is defined as the person for whom the market price is equal to that consumer's marginal willingness to pay. Mr. Boedeker's proposed analysis, however, is based on survey respondents' willingness to purchase a hypothetical sheet package with his chosen features. These sheet packages, which Mr. Boedeker has not yet identified, are, therefore, not sold in the marketplace and as a result, there is no market price for them and, concomitantly, no marginal consumer exists in his proposed approach. Instead, Mr. Boedeker proposes to use a range of prices for a wide array of hypothetical sheet packages and arbitrarily use an average of the partworth estimates as the basis of his economic loss calculation.

40. Thus, none of Mr. Boedeker's economic loss calculations rely on any individual consumer, marginal or otherwise. Instead, it is based on the average probability

[20] This is because willingness to pay is the highest price that a buyer is willing to pay for an extra unit of a good. Daron Acemoglu *et al*, *Microeconomics*, Global Edition. Harlow: Pearson, 2016, p.97.

that sample respondents would purchase a given hypothetical sheet at a specified price.

41. Because it is based on averages, Mr. Boedeker's proposed analysis cannot establish that members of the proposed class suffered a common impact as the result of defendants' actions. The use of an average, by construction, collapses all variation in the underlying distribution of respondent data and thus cannot be used to identify whether individual respondents suffer similar impacts. That is, the existence of an average impact does not imply that the individuals that comprise that average faced a common impact.

**D. In the Absence of a Market-Tested Set of Sheet Attributes, Mr. Boedeker's Proposed Survey-Based Conjoint Analysis is Set Up To Fail**

42. Dr. Vithala Rao, whom Boedeker cites in the Boedeker Report, explains that proper attribute selection for a conjoint study must be done by referencing "information available from a previous consumer survey;" "[e]xternal sources such as Consumer Reports," and the "list of attributes used in their evaluations of the product category;" or conducting a "primary study among a small sample of consumers."[21] Mr. Boedeker has done none of these things. Indeed, at this stage, Mr. Boedeker is undecided about which specific attributes he will use for his conjoint study.[22]

43. Importantly, he has not tied thread count to needs that consumers may have with respect to sheet choice. These needs could be various: trustworthiness of the brand

[21] Vithala Rao, *Applied Conjoint Analysis*, p.43.
[22] Boedeker Deposition, pp. 70:22-71:17; 95:11-96:3; 112:19-22; 190:2-6.

or indeed the store where they are sold, the touch and feel of the sheets (luxurious or sateen, for example), type of material used, resistance to bleaching, whether they are wrinkle-resistant, their color, and so on.[23]

44. Mr. Boedeker has not done any of the steps recommended by Dr. Rao, he does not—and cannot—know the set of salient attributes important to consumers; whether higher thread counts are desirable because they connote higher quality; whether and how thread count is related to "touch and feel" sheet attributes like softness or plushness; whether thread count is related to comfort characteristics like breathability; or indeed whether thread count is even salient for consumers when purchasing sheets.

45. Most of the sheets purchased at issue are sold in clear plastic bags with an unsecured zipper, which means that a customer on the sales floor can open the sheets and feel them.[24] The hand feel or how a sheet feels when touched is very important in selling sheets.[25] But when asked about touch and feel, Mr. Boedeker had this to say:

> It's also a variable that is hard to measure. It's what would be the at (*sic*) level for a touch and feel variable because everything feels and has a different touch from consumer[s] across the spectrum.[26]

Because touch and feel is so subjective, it is entirely possible, even likely, that for at least some consumers a higher thread count is associated with better touch and

[23] Declaration of Danielle Swift, ¶18, April 30, 2021. Ms. Swift is employed with Macy's Merchandising Corporation as the Director of Buying for Sheets.
[24] Declaration of Danielle Swift, ¶12, April 30, 2021.
[25] Declaration of Danielle Swift, ¶12, April 30, 2021.
[26] Deposition of Stefan Boedeker, March 1, 2021, p.147: 19-23.

feel. Thus, it is not sufficient for Mr. Boedeker to include thread count as one of the attributes in his proposed conjoint study, calculate a positive "partworth" for it and claim that this shows that consumers care in a specific, mathematical way about thread count. Those positive partworths may be spurious because thread count may be related to other sheet attributes such as touch and feel or something else.

46. Because Mr. Boedeker has not identified let alone market tested the actual set of attributes he will use for his conjoint study, we must take as an article of faith that Mr. Boedeker will be able to isolate from all other sheet attributes the thread count attribute, so that thread count is independent. This is a critical failing in Mr. Boedeker's purported conjoint approach. Put simply, he cannot know if his conjoint attribute selection with thread count as an independent attribute is even possible. In other words, as stated by the author of a paper that Mr. Boedeker cites:

> Attributes should be independent. This is especially important for partial-profile conjoint studies such as ACA and partial-profile CBC studies. With partial-profile or hybrid conjoint (ACA involves both), attributes that have overlap in meaning can get "double counted," resulting in too much inferred influence on product choice. It is therefore important to economize; including attributes with overlapping meanings is wasteful.[27]

Thus, it is speculative for Mr. Boedeker to assert that he will use his conjoint approach to reliably derive economic loss.

[27] Bryan Orme, "Formulating Attributes and Levels in Conjoint Analysis," *Sawtooth Software Research Paper Series*, p. 1. Mr. Boedeker's claimed design is a partial-profile CBC design.

### E. Mr. Boedeker Does Not Take Account of Hypothetical Bias in His Proposed Survey

47. That survey-based estimates overstate actual willingness-to-pay has been recognized for decades.[28] Several experiments have shown that participants in hypothetical surveys have significantly higher willingness-to-pay than participants in auctions with real money on the line.[29] Conjoint analysis is also susceptible to hypothetical bias.[30] A review of the relevant literature concludes "that, on average, CBCA [choice-based conjoint analysis] grossly overestimates the true WTP of consumers."[31]

48. On the practical side, in a book for practitioners on how to run conjoint analysis, the authors include an entire chapter on distortions in conjoint surveys resulting from hypothetical bias.[32] The authors outline various methods that practitioners can use to mitigate hypothetical bias, such as ensuring that the conjoint presents realistic choice scenarios, and by incorporating revealed preference data. Mr. Boedeker ignores all of these recommendations about how to mitigate hypothetical bias in his proposed conjoint study. Setting aside all the other flaws in his

[28] Kenneth Arrow *et al* "Report of the NOAA Panel on Contingent Valuation," (1993).
[29] John List, "Do Explicit Warnings Eliminate the Hypothetical Bias in Elicitation Procedures? Evidence from Field Auctions for Sportscards," *American Economic Review* 91, no.5, 1498-1507.
[30] For example, see Min Ding *et al*, "Incentive-aligned conjoint analysis," *Journal of Marketing Research*, 42, pp. 67–82 (2005); Min Ding, "An incentive aligned mechanism for conjoint analysis," *Journal of Marketing Research*, 44, pp. 214–223 (2007); Christina Sichtmann *et al*, "Estimating Willingness-to-pay with Choice-based Conjoint Analysis – Can Consumer Characteristics Explain Variations in Accuracy?" *British Journal of Management*, 22: 628-645 (2011).
[31] Christina Sichtmann *et al*, "Estimating Willingness-to-pay with Choice-based Conjoint Analysis – Can Consumer Characteristics Explain Variations in Accuracy?" *British Journal of Management*, 22: 628-645 (2011).
[32] Bryan K. Orme and Keith Chrzan, "Chapter 2: Reducing Hypothetical Bias," in *Becoming an Expert in Conjoint Analysis: Choice Modeling for Pros*, Sawtooth Software: Orem, UT (2017).

methodology, this would render unreliable any estimates he derives from his conjoint survey to determine economic loss.

## IV. Evaluation and Opinions Regarding Mr. Boedeker's Proposed Hedonic Regression

49. Setting aside the fact that Mr. Boedeker has not done any empirical work or even presented an actual model to test predictions, I now evaluate and opine on Mr. Boedeker's proposed hedonic regression approach. Mr. Boedeker's treatment of the hedonic pricing approach in Section 4.1 of the Boedeker Report is cursory. He provides little detail on how a hedonic pricing approach would actually work in the instant matter. Instead, he posits—in the most general terms—exemplary relationships ("*In general terms, and without controlling for other attributes that could influence price*, the higher the thread count, the higher prices are")[33] and a regression equation ("I will consider a regression equation where Price is a function of Thread Count *and certain attributes, like, for example*, Weave, Size, Origin").[34]

50. Thus, Mr. Boedeker has not proposed a model that would apply to the instant case, just a very general one that is not specified. In the context of regression, model specification consists of selecting an appropriate functional form for the model and choosing which independent variables to include or exclude from a regression equation.[35] Relatedly, Mr. Boedeker does not even know how many regressions

[33] Boedeker Report, ¶74. Emphasis added.
[34] Boedeker Report, ¶77. Emphasis added.
[35] Michael P. Allen, *Understanding Regression Analysis*, Ch.35, Springer (2004).

(none of which he has specified) he will need to run since he has not sufficiently analyzed the data.[36]

51. Therefore, the few paragraphs Mr. Boedeker spends on hedonic prices are too vague to be of any real use in determining whether he can reliably compute economic loss for putative class members. Nevertheless, I explain below why this vague discussion of the hedonic approach creates real issues of reliability that he has not addressed.

52. The starting point of this approach is the hedonic hypothesis: Each good is considered a bundle of characteristics, and its price depends solely on these characteristics.[37] Mr. Boedeker's approach appears to consist of linearly regressing the price of sheets on their characteristics.[38] A regression is a formal means of expressing the two essential ingredients of a statistical relationship: a tendency of the response variable (here, price) to vary with the predictor variable (here, all attributes of sheets that matter to consumers) in a systematic fashion; and, a scattering of points around the curve of the statistical relationship.[39] After this step, one considers the estimated coefficients' implicit prices of the characteristics. The next econometric step would be to conduct tests to assess the impact of each characteristic on the price of sheets.[40]

[36] Deposition of Stefan Boedeker, March 1, 2021, p.71:15-72:3.
[37] Kelvin Lancaster, "A new approach to consumer theory," *The Journal of Political Economy*, 74(2):132–57, 1966. Sherwin Rosen, "Hedonic prices and implicit markets: Product differentiation in pure competition," *The Journal of Political Economy*, 82(1):34–55, 1974.
[38] Boedeker Report, ¶77.
[39] Michael H. Kutner *et al*, *Applied Liner Statistical Models*, 5th Ed., p.5.
[40] Mr. Boedeker appears to suggest he will conduct such testing. Deposition of Stefan Boedeker, March 1, 2021, p.151: 7-14.

53. This approach presents considerable drawbacks. First, when multiple tests are performed, the final confidence level in the model as a whole does not correspond to the nominal level of each test. Moreover, the tests are typically not independent of each other, thus requiring involved statistical techniques to compute the final level of the multiple tests. Also, with several sheet characteristics, is difficult to choose which variables to test without involving subjective judgments of the variables' importance. These are important considerations *before* selecting the hedonic regression method. Mr. Boedeker does not address any of these.

54. These issues are worsened by the presence of multicollinearity among the characteristics.[41] Multicollinearity refers to a situation in which more than two explanatory variables in a multiple regression model are linearly related.[42] This is certainly a possibility in the instant case whereby, for example, fabric type and thread count may display multicollinearity, either because they are related or because they are both a proxy for a "hidden" characteristic such as touch and feel that matters to consumers.

55. When multicollinearity is present, the variance of the estimated coefficients is usually high, increasing the likelihood that the estimates are not statistically significant.[43] (When estimates are not statistically significant, one cannot rule out chance "explaining" the relationship posited, as opposed to some underlying

[41] Otis W. Gilley and R. Kelley Pace, "Improving Hedonic Estimation with an Inequality Restricted Estimator," *The Review of Economics and Statistics*, Vol. 77, No. 4 (Nov., 1995), pp. 609-621.
[42] Michael H. Kutner *et al*, *Applied Liner Statistical Models*, 5th Ed., Ch.7.6.
[43] Michael H. Kutner *et al*, *Applied Liner Statistical Models*, 5th Ed., Ch.7.6.

relationship.) When multicollinearity is present, excluding a not significant variable in the selected model may result in model misspecification, and lead to erroneous conclusions regarding the set of characteristics affecting the price. Moreover, the presence of multicollinear characteristics negatively affects the prediction accuracy of hedonic linear models.

56. Mr. Boedeker's has not undertaken any analysis to specify his model or test for multicollinearity.[44] This omission is important since Mr. Boedeker has no external model that explains how sheet characteristics relate to price (i.e., he has no top-down approach) and because there is strong reason to believe (in a bottom-up approach that selects all potential explanatory variables) that multicollinearity is a distinct possibility. Thus his contention that hedonic regression would be a reliable method to arrive at economic loss is speculative because he has no specific model to offer.

April 30, 2021, Bethesda, MD

[44] Deposition of Stefan Boedeker, March 1, 2021, pp.148:-149:3.

Exhibit 1

COMPASS LEXECON

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**SUMMARY**

Sean is an Executive Vice President with Compass Lexecon and works in high-stakes litigation in antitrust and competition, intellectual property, consumer fraud and product liability, and other complex commercial disputes. Prior to joining Compass Lexecon, he headed Cornerstone Research's national intellectual property practice and developed that practice. He has broad subject matter expertise in applied economics, pricing, damages, survey methodology, and market research methods.

His antitrust experience covers analysis of class certification and merits in monopolization, price-fixing, and exclusive-dealing claims matters and in cases involving brand-generic settlements, and allegations of sham litigation. As a consultant, Sean has particular expertise in online advertising, social media, and privacy. He has worked on several large matters that stand at the interface between marketing, high technology, and the law. He also consults on competition issues arising from the assertion of standard-essential patents (SEPs) and fair, reasonable, and non-discriminatory (FRAND) commitments and terms.

In intellectual property, Sean has worked on many of the most-watched disputes involving the world's leading technology companies. His experience includes dozens of patent and other intellectual property cases in U.S. federal courts, matters before the American Arbitration Association, in the International Trade Commission (ITC), and international venues. In life sciences, his work includes numerous patent damages matters involving pharmaceuticals, biologics, and medical devices. He is experienced in ANDA and BPCIA matters. His work includes several trade secrets misappropriation and Lanham Act matters. He has analyzed business-to-business (b2b) marketing, vendor practices, hiring and employee mobility issues, and intellectual property-ownership agreements for joint ventures. His copyright experience includes rate-setting proceedings at the Copyright Royalty Board. He has also worked on several trademark and trade dress cases that involved branding, confusion, and harm-to-brand issues.

Sean has extensive experience in consumer fraud, product liability litigation, and FTC deceptive advertising matters. His work in these areas includes class certification defense, theories of liability and damages analysis. He has also analyzed marketing and consumer behavior aspects of what the "reasonable consumer" would expect and market studies to assess reliance and materiality.

Sean is a Vice Chair in the ABA's Antitrust Division IV Specialized IP Section Antitrust / Interface Committee.

Exhibit 1

**PROFESSIONAL EXPERIENCE**

- 2017 – *Executive Vice President*, Compass Lexecon
- 2002 – 2017, *Vice President*, Cornerstone Research
- 2000, *Analyst*, Freddie Mac

**TRIAL TESTIMONY**

*Rovi Guides, Inc. and TiVo Solutions, Inc. v. Videotron G.P. and Videotron Ltd.*, Federal Court of Canada, Court File No. T-921-17. (Survey design and analysis.)

*Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components*, U.S. International Trade Commission No. 337-TA-1158. (Survey design and analysis.)

*Space Race, LLC v. Funrise, Inc.*, American Arbitration Association, Case No. 01-18-0002-0041. (Damages.)

*The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. v. Norwell, Inc.*, American Arbitration Association, Case No. 16 193 Y 0066712. (Damages.)

**DEPOSITION TESTIMONY**

*Certain Laproscopic Surgical Staplers, Reload Cartridges, and Components Thereof*, U.S. International Trade Commission No. 337-TA-1167. (Analysis of Domestic Industry.)

*Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components*, U.S. International Trade Commission No. 337-TA-1158. (Survey design and analysis.)

*Barry v. DePuy Synthes Companies et al.*, U.S. Eastern District of Pennsylvania, Case No. 2:17-cv-03003. (Survey design and analysis.)

*Velocity Patent, LLC v. FCA US LLC*, U.S. Northern District of Illinois, Case No. 13-cv-8419. (Survey design and analysis.)

*Telefonaktiebolaget LM Ericsson vs. Lava International Ltd.*, in the High Court of Delhi at New Delhi, Ordinary Original Civil Jurisdiction, CS (OS) 764/2015. (Damages.)

**EXPERT REPORTS**

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*Rovi Guides, Inc. and TiVo Solutions, Inc. v. Videotron G.P. and Videotron Ltd.*, Federal Court of Canada, Court File No. T-921-17 (Opening and Reply reports). (Survey design and analysis.)

*Certain Digital Video Receivers, Broadband Gateways, and Related Hardware and Software Components*, U.S. International Trade Commission No. 337-TA-1158. (Survey design and analysis.)

Exhibit 1

*Barry v. DePuy Synthes Companies et al.*, U.S. Eastern District of Pennsylvania, Case No. 2:17-cv-03003. (Survey design and analysis.)

*Seven Networks, LLC v. ZTE USA, Inc. and ZTE Corporation.*, U.S. Northern District of Texas, Case No. 3:17-cv-1495. (Survey design and analysis.)

*Space Race, LLC v. Funrise, Inc.*, American Arbitration Association, Case No. 01-18-0002-0041. (Damages.)

*Velocity Patent, LLC v. FCA US LLC*, U.S. Northern District of Illinois, Case No. 13-cv-8419. (Survey design and analysis.)

*Telefonaktiebolaget LM Ericsson vs. Lava International Ltd.*, in the High Court of Delhi at New Delhi, Ordinary Original Civil Jurisdiction, CS (OS) 764/2015. (Damages.)

*The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc. v. Norwell, Inc.*, American Arbitration Association, Case No. 16 193 Y 0066712. (Damages.)

**CONSULTING ENGAGEMENTS (representative, not exhaustive)**

**Arizona**
*Bard Peripheral Vascular, Inc., et al. v. W.L. Gore & Associates, Inc.* (2:2003-cv-00597)

**California**
*Autodesk, Inc. v. Dassault Systemes Solidworks Corporation* (No: 3:08-CV-04397-WHA)
*Boston Scientific Corporation v. Cordis Corporation* (3:02-cv-00790-SI)
*In Re: Chase Bank USA, N.A. "Check Loan" Contract Litigation (retained on behalf of defendants)* (3:2009-md-02032)
*SPH America, LLC v. Acer, Inc., et al.* (09-cv-02535 CAB (KSC))
*Apple Inc. v. Samsung Electronics Co. Ltd. et al* (5:2011-cv-01846)
*Apple Inc., a California corporation v. Samsung Electronics Co., Ltd. et al.* (12-cv-00630)

**Delaware**
*Siemens Medical Solutions USA Inc. v. Saint-Gobain Ceramics & Plastics Inc.* (1:2007-cv-00190)
*Finjan Inc. v. McAfee Inc. et al (retained by defendants)* (1:10-cv-00593)
*IMS v. Symphony Health Solutions, Source Healthcare Analytics and Impactrx* (1:13-cv-02071-GMS) *Parallel Networks Licensing, LLC v. IBM Corporation* (1:13-cv-02072-SLR)
*IBM Corporation v. Priceline, Kayak Software Group, and OpenTable* (1:15-cv-00137-LPS-CJB)
*Roquette Freres, S.A. v. Solazyme, Inc.* (1:14-cv-01442-SLR)
*SNMP Research, Inc., and SNMP Research International, Inc., v. Avaya Inc.* (1:13-cv-00204-RGSA)
*Adidas AG v. Under Armour Inc., and MapMyFitness Inc.* (1:14-cv-00130-GMS)

**Florida**
*Angela Sanchez-Knutson et al. v. Ford Motor Company* (0:14-cv-61344-WPD)
*Grasso, et al. v. Electrolux Home Products, Inc.* (8:16-cv-00911-CEH-TGW)

**Illinois**

Exhibit 1

*Apple, Inc., and Next Software Inc. v. Motorola, Inc. and Motorola Mobility, Inc.* (1:11-cv-08540)
*Velocity Patent, LLC v. FCA US LLC*, U.S. District Court for the N.D. Illinois, (13-cv-8419)

**Massachusetts**
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*Desktop Metal, Inc. v. Markforged, Inc. and Matiu Parangi,* No. 1:18-cv-10524-WGY

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**New York**
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*The Dial Corporation, et al. v. News Corporation, et al.* (1:13-cv-06802-WHP)

**Pennsylvania**
*Federal Trade Commission v. Cephalon, Inc., et al.* (08-cv-2141)
*Vista Health Plan, Inc., et al. v. Cephalon, Inc., et al.* (06-cv-1833)
*In re Methyl Methacrylate (MMA) Antitrust Litigation - Direct Purchaser Action File (retained by defendants)* (2:2006-md-01768)
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**Texas**
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**Virginia**

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*Coinstar, Inc. v. Coinxchange, LLC* (3:2006-cv-00299)
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*Level 3 Communications, LLC v. Limelight Networks Inc.* (2:07CV589 (WDK/FBS))
*Rolls-Royce plc v. United Technologies Corporation* (1:10-cv-00457-LMB-JFA)
*TomTom, Inc., v. AOT Systems GmbH* (1:12-cv-528 (E.D. VA.))

**Washington**
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*Certain Electronic Devices, Including Wireless Communication Devices, Portable Music and Certain Wireless Communication Devices, Portable Music And Data Processing Devices, Computers and Components Thereof*, No. 337-TA-745.
*Data Processing Devices, and Tablet Computers*, No. 337-TA-794.
*Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers, and Components Thereof*, No. 337-TA-856.
*Integrated Circuits with Voltage Regulators and Products Containing Same*, No. 337-TA-1024.
*Certain Digital Video Receivers and Related Hardware and Software Components*, No. 337-TA-1103.
*100- to 150-Seat Large Civil Aircraft from Canada*, Inv. Numbers 701-TA-578 and 731-TA-1368.

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*Sprint Communications Company LP v. Vonage Holdings Corp., et al* (2:2005-cv-02433, District of Kansas)
*Southeast Missouri Hospital, et al. v. C.R. Bard, Tyco International, et al.* (1:07CV0031 TCM, Eastern District of Missouri Southeastern Division)
*Boston Scientific Corporation et al v. Cordis Corporation* (0:2009-cv-03445, District of Minnesota)
*Duramed Pharmaceuticals, Inc., v. Watson Laboratories, Inc. et al* (3:2008-cv-00116, District of Nevada)
*Volumetrics Medical Imaging, LLC. v. GE Healthcare Ltd., GE Medical Systems, Inc., GE Medical Systems, LLC., GE Medical Systems Kretztechnik GmbH & Co OHG, Toshiba America Medical Systems, Inc., Medison America, Inc., and Siemens Medical Solutions USA, Inc.* (1:05CV00955-NCT-RAE, Middle District of North Carolina Greensboro Division)
*ADIDAS America, Inc., et al. v. Skechers USA, Inc.* (3:15-cv-1741, District of Oregon, Portland Division)
*Apple, Inc. and Next Software Inc., v. Motorola, Inc. and Motorola Mobility, Inc.* (10-CV-662 (BBC), Western District of Wisconsin)
*Cabell Huntington Hospital, Inc. proposed acquisition of St. Mary's Medical Center, Inc.* (Docket No. 9366, Before the Federal Trade Commission) (retained by merging parties)

Exhibit 1

**EDUCATION**

- 2001, M.A. in Economics, Warrington College of Business, University of Florida
- 1995, B.Sc. (Honors, First Class) in Economics, Presidency College, University of Calcutta

**PUBLICATIONS**

"Conjoint Analysis in Litigation," in *Handbook of Marketing Analytics*, Natalie Mizik and Dominique M. Hanssens, eds., 2018, Edward Elgar.

"Privacy Fixing and Predatory Privacy: The Intersection of Big Data, Privacy Policies, and Antitrust," September 2017, *CPI Antitrust Chronicle* (with Ben Dryden).

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"Borough of Lansdale v. PP&L, Inc.," *ABA Antitrust Sherman Act Section 1 Newsletter*, Fall 2006/Winter 2007.

**REPRESENTATIVE PRESENTATIONS**

"The *Humira* Decision and Reverse Payments After *Actavis*," *ABA Antitrust Section IP Committee*, March 4, 2021

"Essential Patents and the Agencies - Incentives to Standardize," *ABA Antitrust Section IP Committee*, March 6, 2018.

"Leveraging Surveys in Patent Litigation: Demonstrating Consumer Perception, Avoiding Errors that Impact Damages," Stafford Publishing Webinar, July 10, 2014.

"Federal Circuit Decisions in 2014: Patent Infringement Reasonable Royalty Damages Strategies," Knowledge Congress Webinar, July 8, 2014.

"Patent Reform and Implications for Damages," Licensing Executives Society Washington Chapter Meeting, September 8, 2009.

**PROFESSIONAL MEMBERSHIPS**

American Economic Association, American Bar Association (currently Vice Chair in the ABA's Antitrust Division IV Specialized IP Section Antitrust / Interface Committee), American Statistical Association.

Exhibit 2

**Materials Relied Upon**

Third Amended Class Action Complaint, *Hawes et al. v. Macy's, Inc.*, United States District Court for the Southern District of Ohio, Case No. 1:17-cv-00754, August 12, 2019.

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Min Ding *et al*," Incentive-aligned conjoint analysis," *Journal of Marketing Research*, 42, pp. 67–82 (2005)

Min Ding, "An incentive aligned mechanism for conjoint analysis," *Journal of Marketing Research*, 44, pp. 214–223 (2007)

Exhibit 2

Christina Sichtmann *et al*, "Estimating Willingness-to-pay with Choice-based Conjoint Analysis – Can Consumer Characteristics Explain Variations in Accuracy?" *British Journal of Management*, 22: 628-645 (2011).

Bryan K. Orme and Keith Chrzan, "Chapter 2: Reducing Hypothetical Bias," in *Becoming an Expert in Conjoint Analysis: Choice Modeling for Pros*, Sawtooth Software: Orem, UT (2017).

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Sherwin Rosen, "Hedonic prices and implicit markets: Product differentiation in pure competition," *The Journal of Political Economy*, 82(1):34–55, 1974.

Michael H. Kutner *et al*, *Applied Liner Statistical Models*, 5th Ed.

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